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REPORT

ON THE

MILITARY STATION

OF

VELLORE.

[*Extracted from the Proceedings of the Sanitary Commissioner.*]

1866.

Madras:
GANTZ BROTHERS,
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APPENDIX A.

Statistics of mortality in the Native Army of the Madras Presidency, 1865.

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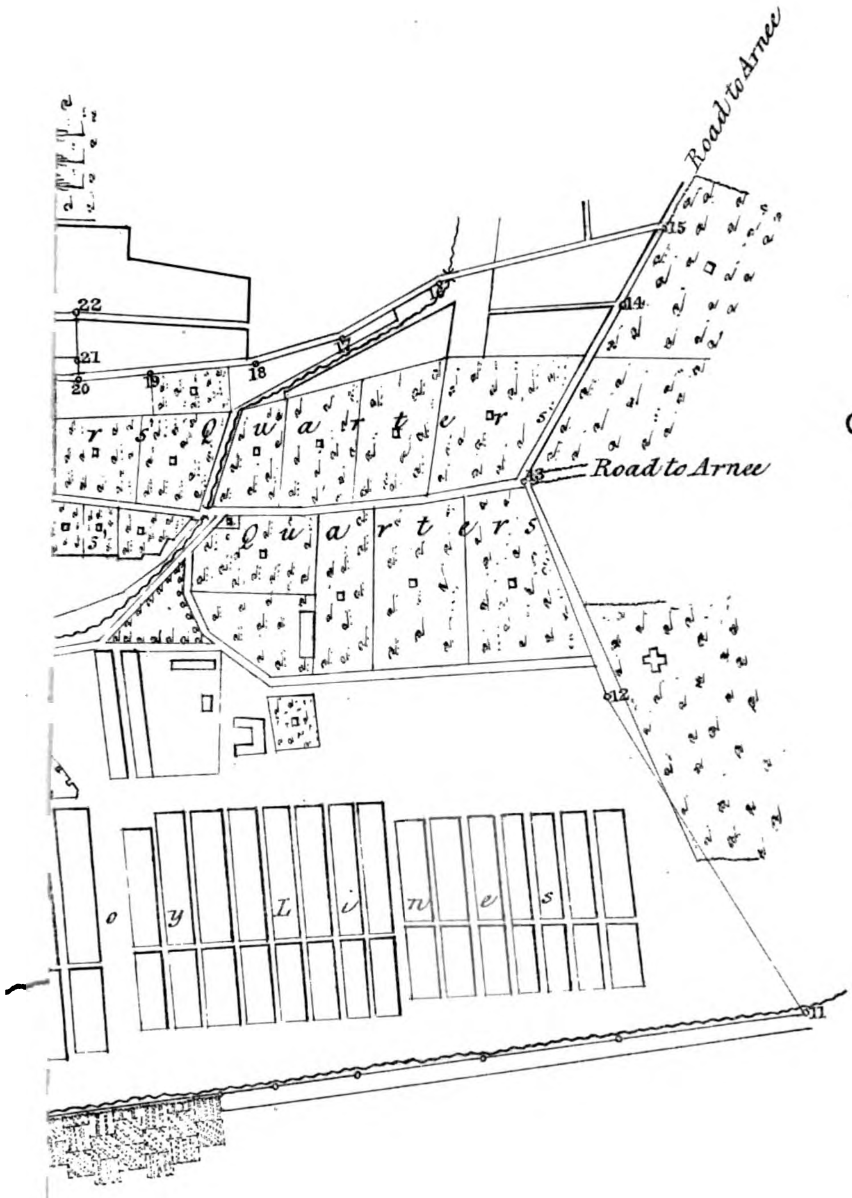

PLAN
OF THE
CANTONMENT
OF
VELLORE

700 YARDS

True Copy

[illegible]

Offg Secretary Sanitary Commissioner

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INSPECTION REPORT

OF

VELLORE

BY

R. S. ELLIS, C.B.

THE inspection of the Military station of Vellore was made on the 30th June, in company with the Officer Commanding the station, Staff, and Medical Officers, from whom I received every information I required for completing this report.

Topography.

1. The station of Vellore situated in the District of North Arcot and in the Centre Division of the Madras Army, is 84 miles East of the Presidency town, with which it is connected by railway. It is 675 feet above the level of the sea, and 35 above the bed of the Palaur river, which runs a mile to the North of the station.

The soil upon which the station is built is alluvial, overlying primitive rock. Where the ground approaches to the slopes of the hills, it is hard, dry and gravelly, but in parts further removed, it becomes in many places, low and swampy.

The hills here referred to form lofty irregular chains which run South-East and North-West; at the North-West extremity of the hills is situated the Military Cantonment, with a large Native town, interposed between it and the base of the range, which at this point rises nearly 800 feet above the plain.

The country around is interspersed with a few trees and patches of ground under wet cultivation, which approach the margins of the station.

No Meteorological register.

2. No meteorological register has been kept up at this station, but the temperature is much raised during the latter part of the day by radiated and reflected heat from the rocky hills, which run within half a mile of the place. The prevailing winds are westerly, from April to September during the day, and East or South-East during the night. In October and March they are variable, and from the beginning of November to the end of February, they are chiefly from the North and North-East.

The rainfall generally averages about 22 inches, but during the past year there has been a remarkable deficiency of seasonable rain. The water supply of the Cantonment is principally derived from the rainfall and much scarcity has prevailed.

Salubrity.

3. This station has always been noted for its salubrity, although outbreaks of epidemic disease are in common with other Stations, not of unfrequent occurrence. During the year, it is shewn by the table, Appendix A, to have been the healthiest station garrisoned by Native

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troops in the Madras Presidency, and the following table of stations* occupied by Native troops arranged according to their order of salubrity, calculated on the average of 10 years from 1847 to 1856-57, shows that Vellore occupies a high position for comparative salubrity amongst other places garrisoned by Native troops in this Presidency.

TABLE of stations occupied by Native Troops, arranged according to their order of salubrity, calculated on the average of 10 years from 1847 to 1856-57.

Ratio per 1000 of sickness to strength.			Ratio per 1000 of deaths to strength.			Ratio per 1000 of deaths to strength, including those from Cholera.		
1.	Malacca	374	1.	Quilon	6·8	1.	Hurryhur	4·9
	Kurnool	547		Jaulnah	7·3		Vellore	5·6
	Cannanore	598		Bellary	7·8		Bellary	6·1
	Kamptee	611		Cannanore	8·4		Jaulnah	6·4
5.	Penang	647	5	Secunderabad	8·5	5.	Quilon	6·5
	Mangalore	650		Paulghaut	9·1		French Rocks	7·01
	Vellore	660		Hurryhur	9·6		Secunderabad	7·1
	Samulcottah	693		Bangalore	10·1		Madras	7·2
	Jaulnah	727		Mangalore	10·2		Paulghaut	7·6
10.	Hurryhur	748	10.	Masulipatam	10·2	10.	Cuddapah	7·6
	Bellary	772		Vellore	10·4		Trichinopoly	7·8
	Secunderabad	774		Madras	10·5		Kurnool	8·0
	Palamcottah	787		Kurnool	10·5		Cannanore	8·4
	Quilon	787		Malacca	10·8		Palamcottah	8·6
15.	French Rocks	787	15.	French Rocks	11·6	15.	Malacca	8·7
	Madras	807		Kamptee	11·9		Bangalore	9·1
	Berhampore	824		Cuddapah	12·04		Kamptee	9·7
	Cuddapah	837		Samulcottah	12·2		Masulipatam	9·8
	Paulghaut	839		Mercara	14·4		Mangalore	10·2
20.	Trichinopoly	858	20.	Palamcottah	15·9	20.	Mercara	10·9
	Bangalore	900		Trichinopoly	16·1		Samulcottah	11·3
	Vizianagrum	966		Vizagapatam	16·3		Berhampore	13·5
	Masulipatam	972		Penang	17·2		Meaday (1)	15·1
	Mercara	985		Singapore	17·3		Vizagapatam	16·1
25.	Singapore	1035	25.	Rangoon (4)	17·7	25.	Vizianagrum	16·8
	Rangoon (4)	1358		Meaday (1)	19·6		Singapore	17·1
	Vizagapatam	1383		Vizianagrum	19·8		Penang	17·2
	Moulmein	1512		Berhampore	20·2		Rangoon (4)	17·6
	Tonghoo (4)	1831		Tonghoo (4)	21·9		Tonghoo (4)	19·5
30.	Henzada (2)	1996	30.	Moulmein	22·8	30.	Moulmein	20·8
	Meaday (1)	2504		Labuan (8)	29·1		Labuan (8)	29·1
32.	Labuan (8)	2714	32.	Henzada (2)	29·2	32.	Henzada (2)	29·2

The figures underlined indicate the number of years for which average has been obtained.

From this it is shown that out of thirty-two stations Vellore stands seventh in order of comparative salubrity as regards actual sick rate, viz., 660 per 1,000, eleventh in its mortality, viz., 10·4 per 1,000, and second in its ratio per 1,000 of deaths to strength including those from Cholera, viz., 5·6.

In order to arrive at an opinion concerning the present salubrity of the Cantonment the three following returns are annexed.

1st. The return of sickness and mortality in the 21st Regiment N. I., which occupied the station from the 2nd of June 1861 to the 29th November 1865.

2nd. A similar return of the 6th Regiment N. I., up to the present time, this Corps having relieved the 21st N. I., at the end of 1865.

3rd. A return shewing the health of the 6th Regiment N. I., during the time it was quartered at the new station of Mysore, where having suffered very much from Fever, &c., an opportunity is afforded of contrasting the favourable influence upon the health of this Corps from its removal to this station.

* Vide report by Inspector General Pearse, page 601, Royal Sanitary Commissioners' Report.

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The following return shows the sickness, mortality and daily average sick in the 21st Regiment N. I., stationed at Vellore during 1861-62-63-64 and 65.

	Average Strength.	Admissions.	Deaths.	Average daily sick.	Ratio per mille. Admissions.	Ratio per mille. Deaths.	Ratio per mille. Average daily sick.	Remarks.
1861* ...	750	434	7	53	578·6	9·3	70·6	*From 2nd June to 31st December 1861
1862 ...	$634\frac{1}{2}$	419	8	$11\frac{1}{3}$	660·3	12·6	17·8	
1863 ...	$699\frac{1}{4}$	349	5	$9\frac{1}{4}$	499·1	7·1	13·2	
1864 ...	$428\frac{1}{3}$	245	5	$8\frac{1}{4}$	572·02	11·6	19·2	
1865† ...	$517\frac{1}{3}$	159	4	6	307·3	7·7	11·5	†From 1st January to 29th November 1865.

Diseases which have contributed to make up the admissions in the above return.

	Varicella.	Variola.	Intermittent Fever.	Remittent Fever.	Continued Fever.	Ophthalmia.	Dysentery.	Diarrhœa.	Cholera.	Rheumatism.	Syphilitic and Gonorrhœal diseases.	Other diseases.	Total.
1861..	1	......	176	3	....	18	3	19	1	62	18	133	434
1862...	1	2	161	2	1	20	8	14	3	73	30	104	419
1863...	7	1	91	2	1	20	5	16	2	42	39	123	349
1864...	17	......	56	....	....	32	2	10	......	29	18	81	245
1865...	......	......	34	1	....	8	2	4	5	5	14	86	159

Return showing the Deaths during 1861-62-63-64 and 65.

	Intermittent Fever.	Remittent Fever.	Continued Fever.	Dysentery.	Diarrhœa.	Cholera.	Other diseases.	Total.
1861 ...	......	......	......	1	1	......	5	7
1862 ...	......	......	1	......	......	3	4	8
1863 ...	......	1	......	......	......	2	2	5
1864 ...	1	......	......	......	......	1	3	5
1865 ...	......	......	......	......	......	2	2	4

Excluding the first six months of the residence of this Corps at Vellore, during which time it seems to have suffered from an exceptional amount of sickness (most probably due to the effects of foreign service in China, from whence it had just returned,) the returns give us the following figures as the average health of the Regiment, for the three years and eleven months it remained in Vellore.

Average admissions per mille of strength............ 443
Do mortality do do 10
Do daily sick do do .... 15·8

These figures contrast very favorably with those of other stations, and an examination of the sick return shows a remarkable decrease in the amount of sickness and mortality in the Regiment during its residence here.

The prevailing diseases appear to have been Intermittent Fevers, Ophthalmia, Diarrhœa. Only eight deaths took place in the Regiment from 1861 to 1865, from Cholera.

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The following return shows the sickness and mortality in the 6th Regiment N. I., since its arrival in Vellore in December 1865.

	Average strength.	Admissions.	Deaths.	Average daily sick.	Ratio per mille. Admissions.	Ratio per mille. Deaths.	Ratio per mille. Average daily sick.
1865 for December... ...	715	52	2	21½	72·7	2·7	30·06
1866 1st Quarter... ...	831	61	2	5¾	73·4	2·4	6·9
1866 2nd Quarter... ...	831	55	1	13 3/16	66·1	1·2	15·7

Diseases which have contributed to make up the admissions in the above return.

	Miasmatic.	Enthetic.	Dietic.	Parasitic.	Diathetic.	Tubercular.	Nervous.	Respiratory.	Digestive.	Urinary.	Integumentary.	Of Nutrition.	Accidental.	Total.
1865	38	...	...	2	1	1	...	2	...	...	2	1	5	52
1866	84	4	1	3	...	...	1	3	3	1	7	4	5	116

Return showing the deaths from 1865 to 1866.

	Miasmatic.	Respiratary.	Total.
1865...	2	......	2
1866...	2	1	3

In order to contrast thoroughly the effect which the Vellore climate has had on this Corps, an examination must be made of the following return, which shows the state of the Regiment during the time it was stationed at Mysore.

	Average strength.	Admissions.	Deaths.	Average daily sick.	Ratio per mille. Admissions.	Ratio per mille. Deaths.	Ratio per mille. Average daily sick.
1864 1st Quarter ...	726	124	1	21	170·7	1·3	28·9
1864 2nd do ...	739	207	1	29	280·1	1·3	39·2
1864 3rd do ...	730	385	2	46	527·3	2·7	63·01
1864 4th do ...	710	726	6	123	102·2	8·4	173·2
1865 1st do ...	702	328	3	64	467·3	4·2	91·1
1865 2nd do ...	702	319	2	89	454·4	2·8	126·7
1865 3rd do ...	718	263	...	70	366·2	...	97·4
1865 4th do ...	715	203	...	21½	283·9	...	30·06

Principal diseases which made up the admissions in the above return.

	Miasmatic.	Enthetic.	Dietic.	Parasitic.	Diathetic.	Tubercular.	Nervous.	Circulatory.	Respiratory.	Digestive.	Urinary.	Reproductive.	Locomotive.	Integumentary.	Of Nutrition.	Accidental.	Total.
1864 ...	1246	7	...	25	3	1	3	1	2	14	1	...	...	48	25	66	1442
1865 ...	784	17	1	43	10	3	10	...	3	15	...	4	10	70	24	119	1113

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Return shewing the deaths from 1864 to 1865.

	Miasmatic.	Tubercular.	Circulatory.	Of Nutrition.	Total.
1864	8	...	1	1	10
1865	6	1	...	...	7

A glance at the two tables shows the great improvement which has taken place in the Corps since its arrival at this station, which speaks well for its general salubrity. The average number of admissions per quarter has fallen from 338 per thousand per quarter to 66·1 per quarter, while its average daily sick has decreased from 88·5 to 15·7.

The following table shows the difference in the average sickness, &c., during the time the 6th N. I. has been stationed at Mysore and Vellore.

Average sickness and mortality of 6th Regiment per mille of strength.					
At Mysore during 1864, and first three quarters of 1865.			At Vellore during December 1865, and first two quarters of 1866.		
Average admissions	Average mortality.	Average daily sick.	Average admissions.	Average mortality.	Average daily sick.
338·3	2·9	88·5	70·7	2·1	17·5

4. At the period of my inspection the following was the strength of H. M. 6th Regiment N. I., which furnished the garrison of the station. Two Companies of this Corps are detached for duty at Saint Thomas' Mount.

Strength of Garrison.

European Officers.	Native Officers.	Staff Serjeants.	Havildars.	Drummers.	Naigues.	Privates.	Puckallies.	R. and P. Boys.	Chowdry.	Peons.	Moonshee.	Lascars.	Dressers.	Toties.
12	14	2	37	14	37	429	6	55	1	2	1	7	2	2

5. The Military station comprises within its boundaries the hutting lines of a Native Corps, a Regimental, Civil and Garrison Hospital, and a Jail, the two latter being located within the Fort, and several large bazaars.

Military station.

6. The Fort lies to the North-West side of the station, and is still in a good state of repair. It is surrounded by a broad ditch, cut in the solid rock, which, at the time of my visit, was but partially filled with water. The interior presents a capacious area which contains, in addition to the above buildings mentioned, the Collector's Cutcherry, Judge's

Fort.

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Court, Cantonment Offices, and Quarters of the Staff Serjeants. There are also the Mahals, and the old Barracks which were occupied in former years by European Troops. The interior is remarkably clean and well kept and is one of the healthiest sites in the Cantonment.

Water supply.

7. The water supply for the inhabitants of Vellore is chiefly derived from the Soorea Goonta tank, which lies to the N. E. of the Sepoy lines. This reservoir is 5½ acres in extent and faced on all sides with stone. It receives its chief supply of water from a nullah which runs into it at its S. E. corner, and which receives a large amount of surface drainage in its course from the hills, and is itself used as a latrine by the natives. A large amount of filth is therefore carried into the tank.

A silt trap has been constructed for correcting this evil, but it is not sufficient for the purpose, as from the small area of the passage allowed for the discharge of water into the tank, the pit into which the first deposits should take place, overflows, and the water runs directly into the tank carrying with it a vast amount of impurity. This might be remedied at very slight trouble and expense. A masonry conduit conveys the water from this tank to a stone reservoir inside the Fort.

At the time of my visit, from the scarcity of rain, the tank was almost empty, its bottom being more than half exposed, and in order to obtain water the natives were obliged to dig pits in different parts to enable them to fill their chatties.

The water from being so low, was thick and muddy, and presented a most uninviting appearance for drinking purposes. As the bed of the tank is now so exposed, a good opportunity offers itself for cleaning and deepening this reservoir.

I was informed by the Joint Magistrate, that gangs of laborers who are suffering from the prevailing distress would be employed in this useful and necessary work. Throughout the Cantonment there are numerous wells, the water supply from which is all, more or less, brackish. The following analyses of the water from the tank, a well near the Civil Hospital, and from the Jail have been made by the Chemical Examiner at Madras.

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TABULAR STATEMENT OF THE RESULTS OF ANALYSES OF THE FOLLOWING DRINKING WATERS IN USE AT VELLORE.

Number.	Sources.	Sensible properties.			Chemical properties.																		Remarks.
					Reaction to test paper.	Solid matter in one Imperial Gallon.			Oxidizable matter by permanganate solution relation of oxygen to organic matter 1 to 8.	Hardness to soap test.			Chlorides determined volumetrically as chloride of sodium in one gallon.	Bases in solution by Carbonic Acid.			In solution after boiling.						
		Appearance.	Odour.	Taste.		Organic and other volatile matters.	Inorganic salts, &c.	Total.		Temporary.	Permanent.	Total.		Lime.	Magnesia.	Iron.	Lime.	Magnesia.	Chlorides.	Sulphates.	Nitrates.	Ammonia.	
1	Sooria Colum Tank, Vellore.	Opaque with floating black particles—not filtering clear—hue brownish.	Earthy. .	Earthy. .	Faintly Alkaline.	grains. 4·45	grains. 18·5	grains. 22·95	grains. 3·36	6°	5°	11°	grains. 5·846	In moderate quantity.	In moderate quantity.	Traces...	Small quantity.	Traces only.	Small proportion.	Small proportion.	None .	None·.	This is the best specimen of the three waters sent from Vellore. It contains nothing objectionable except the organic and oxidizable matter and this in a state of decomposition. With proper filtration through charcoal allowing also for subsidence of suspended impurities, this might easily be rendered a wholesome drinking water.
2	Vellore Civil Dispensary Well water.	Contains small white floating particles—after filtration, clear—hue greenish.	Disagreeable, like water kept in Cask.	Disagreeable, like water kept in Cask.	do...	6·25	26·4	32·65	5·152	11°	4°	15°	6·1306	Rather large quantity.	Above average.	Scarcely a trace.	In very small quantity.	In very small quantity.	Determined above.	do...	do...	do...	This water contains a large amount of organic impurity chiefly in a decomposed state as the permanganate solution was very rapidly dissolved, the amount of hardness is not excessive and much of it is removeable by boiling. I should say with proper attention to cleanliness, filtration, this water might be made perfectly wholesome.
3	Well in Vellore Jail compound.	Clear faint greenish hue.	Earthy. .	Soft	Alkaline.	11·5	36·95	48·45	1·264	17°	27°	44°	37·999	Very large amount.	Above average amount.	Traces...	Average quantity.	More than average quantity.	Large quantity.	Large quantity.	None detected.	None detected.	An objectionable water both for drinking and domestic use, the hardness is large and the volatile and organic impurity in great quantity.

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8. The natural drainage of the station is good, the storm water being carried away by nullahs; but there is no system of made drains for carrying off the sewage except in what is named the Cantonment bazaar.

Drainage.

9. The station is cleanly in appearance, and its conservancy better than might be expected from the very limited means at the disposal of the authorities. These are represented by the Officer Commanding to be totally inadequate to meet the requirments of the station, in consequence of there being included within military limits, large portions of the town and several very large bazaars, which it is quite impossible to keep in even tolerable state of cleanliness out of the regulated conservancy allowance.

Conservancy.

I am informed this allowance amounts to " Rupees 55-13-0 per mensem, for maintaining a certain establishment to keep the Fort, the Sepoy Lines, and as much more of the Cantonment as may be possible, in some sort of order and cleanliness; for the first two purposes, however, this is inadequate, as, out of it, besides the hire of the Scavenger's cart and the pay of Sweepers, &c., comes also the lighting of the Fort and the repair of all its roads; it is therefore clear that from this source, nothing can be got for the bazaars or for the Cantonment generally."

Out of the allowance here alluded to, one cart is provided with a certain number of sweepers which is supposed to provide for the conservancy of the whole station, including the Sepoy lines, Cantonment road, Garrison Hospital, Fort, Public necessaries, Slaughter yard, and the cleaning of all the numerous nullahs which intersect the Cantonment.

10. The Long Bazaar of Vellore stands within Military limits where all the trade of the place is carried on. This portion of the Cantonment, with the assistance of a gang of prisoners once a week, is kept in a tolerably clean condition, but it is stated that the daily accumulations of rubbish which take place are so great, as to render its sanitary condition particularly objectionable before the close of the week.

Long Bazaar.

11. The Commissariat Bazaar is situated on the east side of the Cantonment, and consists of three double rows of houses running East and West. A square bottomed drain surrounds it which carries off the storm water into a neighbouring nullah. This drain should have been saucer shaped, and should have been continued down each side of the streets.

Commissariat Bazaar.

12. Close to the bazaar is a small piece of ground upon which all the animals for the use of the Cantonment and whole native town are slaughtered, there being no properly constructed yard for this purpose in the station. There are no public means whatever for keeping this place clean. The ground is unpaved and there are no drains or any receptacle or other provision for carrying off the blood; the soil is therefore saturated with filth, and upon the site of the butchers' recent performances are collected myriads of flies which resort alternately to it and to the public latrines of the bazaar, which form one of the boundaries of this most offensive locality.

Slauhgter Yard.

13. The conservancy of these public latrines is much neglected from want of means, and the persons living in the neighbourhood complain justly of the intolerable smell arising from the combined nuisance of these and the slaughter yard.

Public Latrines.

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In addition to these places being resorted to by the surrounding inhabitants, they are places of deposit of all the excreta from the latrine of the Regimental Hospital, which lies at no great distance.

The close proximity of these two nuisances in the heart of a crowded bazar requires no comment, and it is a point of urgent necessity that a place for a properly constructed slaughter house should be found. The Station Staff Officer pointed out to me a site for this purpose which would be free from all objections.

Voluntary Conservancy Fund.

14. I am informed that a few months ago the above nuisance was far greater than at present, but owing to the energetic exertions of the Station Staff Officer, a small fund has been raised by a voluntary subscription of two pice from each person keeping a stall in the bazaar, by which a cart, six sweepers, and a toty are maintained for clearing away the rubbish from the bazaar, and abating as much as possible, the nuisance arising from the latrines and slaughter yard. Without this, it is impossible that any thing approaching cleanliness could have been maintained in this portion of the Cantonment.

Public Latrines.

15. The latrines here spoken of are the only public ones in the place, the consequence being, as has just been stated, that the nullahs are used as places of resort more especially near the bridges of the Cantonment roads. I would strongly recommend that public latrines should be built in convenient sites which have already been selected by the Station Staff Officer.

Cattle yard.

16. Close to the slaughtering yard is a place where the sheep are penned a few hours previous to their slaughter. This proceeding is a wise one considering the proximity of the places just described.

I have brought this unsatisfactory condition of the conservancy of the station and town to notice as existing at the date of my inspection. The proper remedy for this is the introduction into Vellore of the Towns Improvement Act. Vellore is not a Military Cantonment, under the existing law, and there is no reason that it should not for municipal purposes be treated as a Civil Town, only the Regimental Lines being exempted.

If this Act is applied, ample funds will be provided for keeping the town and station clean. The town itself is well built, there are no natural difficulties as regards the required drainage, and the great majority of the inhabitants are well able to pay municipal rates.

Burial ground.

17. The old station burial ground situated close to these bazaars, has been very properly closed and a fresh site has been selected at some distance from the Cantonment where it can never become a nuisance to the inhabitants of the station. Considering the salubrity of the station, the burial ground which is enclosed by a wall is unnecessarily large.

REGIMENTAL LINES OF H. M. 6TH REGIMENT N. I.

Situation.

18. The lines occupied by the 6th Regiment N. I., are situated to the West of the Cantonment. The huts are regularly built with streets between them, running almost due East and West. The houses are all tiled and in very fair order, but the compound walls are rather dilapidated here and there, and seem to require constant repair from the continual crumbling which takes place from their surface, caused by the large quantity of salts contained in the soil of which they are built.

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19. The natural drainage of the site is good. The ground slopes gradually away to a nullah on the West which carries off the storm water. No attempt however is made to remove the fluid sewage from the huts which runs out from each courtyard into the road way, and saturates the ground. The side drains require deepening as at present they are blocked up and unfit for carrying off the rain water. During heavy rains it sometimes happens that the North end of the lines is flooded by the overflow of the nullah on the West, and the tank on the other.

Drainage.

20. The conservancy of the lines is decidedly bad. The system consists of removing as much of the rubbish as possible, by hand to places outside the lines, where it is deposited till carried away by the Cantonment cart, which visits the lines three times a week. The Sepoys subscribe one pie each towards providing a Company sweeper, whose duty it is to remove the rubbish from the immediate vicinity of the houses; but from the quantity of litter lying about at the time of my visit, it was evident that the work of cleaning the lines is badly done.

Conservancy.

21. There is no public latrine in these lines and the Sepoys all resort to a nullah, a hundred yards in the rear. An excellent locality exists beween this nullah and the lines, upon which to erect two regimental latrines. These are very necessary and should at once be built.

No public latrine.

22. A Sepoys' garden has been laid out in the Fort, but the men of this Corps have shown no inclination to work in it. The last regiment quartered here commenced a garden upon the piece of land, just referred to, in rear of the lines. This would form an excellent site for such a purpose as it would be most conveniently situated for the men to work in, and it would also be able to obtain an unlimited supply of manure from the latrines, which I have recommended should be built here.

Sepoys' garden.

23. The Quarter guard room is, as usual, under the same roof as the "place of arms." It is simply a verandah room 25 × 7 ventilated by two windows. The accommodation afforded is insufficient. This is not of much consequence during a great part of the year, but during the rains the men must either be greatly overcrowded or sleep in the verandah exposed to the damp.

Quarter Guard room and Prison.

The prison room is 12 × 12. At the time of my visit, four prisoners were confined in it which is about the number it is calculated to hold.

No latrine is attached to the Quarter guard, the men and prisoners having to resort to a nullah at some distance. Conveniences of this description are never given to the guard rooms of Native Regiments; it is not therefore to be wondered at that the ground in the neighbourhood is so often soiled. This should be remedied by the erection of a small privy.

24. The Sepoys obtain all their drinking water from the Soorea Goonta tank, which is situated close to their lines. There are several wells close by, but the water from all of them is brackish and unfit for drinking purposes. If deepened and protected as described in para. 7. this water supply is in ordinary years sufficient and good.

Water supply.

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25. The Regimental Hospital is situated on the opposite side of the Cantonment, in close juxtaposition to the Native city, the houses of which actually abut upon the rear wall of the Hospital and its windows overlook Native compounds which are by no means clean.

Regimental Hospital.

The building stands within an enclosure, 50 yards square, and was originally intended to accommodate the sick of two Native Regiments. One half of the Hospital runs at right angles to the other, forming one large ward, one portion of which faces the East, the other the South. A verandah 9½ feet broad, runs round the front of the building. The roof is constructed of tiles and bamboo supported by a series of masonry pillars, two feet square, which, running down the centre of the ward, not only take up room but interfere with the perflation of air through the buildings.

26. The ventilation of the Hospital is, however, amply provided for by ridge ventilators, numerous doors and windows, and circular openings here and there in the wall, fitted with open tile work. Notwithstanding this however, there is a deficiency of light throughout the ward, the absence of which gives it a dull gloomy look.

Ventilation.

The basement of the building is sufficiently raised and the floor is laid with asphalte.

27. One side of the Hospital is 113 feet long and the remaining portion which runs at right angles to the other, is 69 feet. Both portions are 22 feet broad. The walls of the building are 9 feet, 7 inches high and 20½ feet to the ridge.

Accommodation.

The superficial area of the ward is 4,004 square feet and is therefore capable of affording accommodation for 40 patients, each of whom would have 1,000 cubic feet breathing space, and 100 feet superficial area.

This accommodation is more than ample for any thing this Regiment is likely to require, especially as two Companies are always on duty at the Mount.

28. There were 24 iron cots in the ward at the time of my visit. Each patient was supplied with a straw mattress, quilted resai and country blanket.

Cots.

29. At the South end of the building is a small room with a terraced roof 22 x 14, reserved for special cases. It appears to have been originally intended as a bath room. The roof is very low, but the ingress and egress of air are provided for by means of a very good ventilator in the centre of the room. A lunatic was confined in this room at the time of my visit.

Special ward.

Abutting upon the enclosure wall are a cook house and guard room, the latter being 15×10.

30. The Hospital latrine is a large building in rear of the Hospital with which it is connected by means of a covered way. It is absurdly large for the purpose required, and is also built in a style unsuited to the habits of natives. Wooden seats are constructed as in a European latrine, but instead of receptacles being below the seat, flat earthenware dishes, partially filled with earth, are placed upon them. The conservancy is fairly attended to, but the wooden seats should be removed and the place adapted to native habits. At present the patients stand upon the seat, and the urine saturates the ground below. Urine tubs of precisely the same pattern as those sup-

Subsidiary buildings, latrine.

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plied to European Barracks are placed in the latrines, but not used for the purpose intended, being converted into reservoirs for dry earth.

Conservancy.

31. No cart ever visits the Hospital, but the excreta are all removed by hand, and deposited in the public latrines at the back of the slaughter yard. It is stated that the excreta are eventually bought as manure by the ryots.

Reservoir.

32. A masonry reservoir* has been built in the Hospital compound, connected with a well outside, and intended as a bath for the use of the patients. Its utility is, however, defeated by there being no provision for its water supply.

Water supply.

33. The water used in the Hospital is obtained from the tank before alluded to.

Staff Serjeants' quarters.

34. The quarters of the Staff Serjeants are within the Fort in one block, the end of which abuts upon the Fort wall. Two other Serjeants (the Barrack and Key Serjeant), live here in addition to the Regimental Staff Serjeants. Each has two good sized rooms and is very comfortably accommodated.

Officers' quarters.

35. The Officers live in private bungalows situated on each side of the road leading to the Race course; they are rather closely crowded together, and free perflation of air is somewhat impeded on this account. The compounds are clean but nuisances arising from the dirty habits of the Native followers are complained of.

House owners should on the introduction of the Towns Improvement Act, be compelled to build small native latrines in each compound.

GARRISON HOSPITAL.

Situation.

36. The Garrison Hospital is situated inside the Fort at its Northern extremity. It is a badly constructed building, consisting of two blocks, a few feet apart, forming a small courtyard between them, paved with masonry. It contains three wards, one for Native Details, one for Convicts from the Jail, and the other for Europeans, chiefly pensioners.

In the Northern blocks are three small rooms, two of which are used for a store room and a dispensary, while the central one is the European ward referred to above. A verandah 7 feet broad runs along the South side of this block.

European ward.

37. The central room is 17½×17½ and at the period of my visit contained four European Pensioners. The superficial area being 306 square feet, these men only obtained 73 feet of superficial area each. This is a deficiency which would be condemned in any building in which sick men are to be treated. The room is only ventilated by the doors and windows. The floor of the room is rough and difficult to keep clean.

Native Detail wards.

38. The Southern block contains a Native ward 57½ long by 24 broad, giving accommodation to 13 patients, its superficial area being 1,380 square feet. The roof of the ward is supported by four masonry pillars down the centre. There is no means of ventilating the place, but by the windows.

* This was built at the private expense of an Officer who Commanded a Regiment at this station.

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39. The ward for convicts is at the end of the Detail ward. It is 33×16 having a superficial area of 528 feet. It is ventilated by four windows on the West side. At the time of my visit it contained three convicts.

Convict ward.

40. At the end of the ward used by the Native Details is a low dark passage containing tubs. This was intended as the bath room for the Europeans. No ablution accommodation was provided for the Native patients.

Bath for Europeans.

41. There are two small latrines near the wards, one for Europeans and the other for Natives. They are both very badly constructed. A drain from the cook house runs through the former. It is impossible that proper conservancy arrangements can be made in such places.

Latrines.

42. Outside the Hospital is a newly constructed latrine intended for the convicts, but stated, never to be used by them on account of the inconvenience of having to guard them outside the ward.

Convict Latrine.

It was, however, certainly used by some parties (probably from the Small Cause Court next door), and its conservancy being entirely neglected, was in a most offensive condition.

43. The Cook house is situated near the latrine, and next door to it is a room which is sometimes used for performing *post mortem* examinations.

Cook house.

44. Altogether the Garrison Hospital is a most defective building, not only from its construction but its situation, which is but little calculated to benefit the health of any patients sent thither for treatment. It is shut in on the North by a Racket Court; on the West, by a large Hindoo Pagoda; on the East, by the Fort wall; and the South by the Small Cause Court; it is, therefore, entirely cut off from the influence of prevailing winds. Added to this, its own ventilation and the arrangement of its wards are most defective, and I am of opinion it should be condemned as a place for the treatment of sick, more especially Europeans.

Defective site of Hospital.

45. Situated within the Fort is a very good building near the Jail, used as a School house, consisting of three good sized rooms, and several smaller ones of the following dimensions, with a large compound and convenient out houses.

School house.

	Length.	Breadth.	Height.	Superficial area.	Cubic area.
No. 1 Room	32′2″	16′ 4″	17′	525	8925
No. 2 do	17′3″	16′ 4″	13′6″	281	3793
No. 3 do	17′3″	16′ 4″	13′6″	281	3793
No. 4 do	16′3″	9′11″	10′6″	161	1690
No. 5 do	16′3″	9′11″	10′6″	161	1690
No. 6 do	10′5″	10′ 0″	10′6″	104	1092
No. 7 do	10′5″	10′ 0″	10′6″	104	1092

This building is peculiarly well adapted for a Garrison Hospital, and I would strongly recommend that it should be given up for this purpose, in lieu of the wretched building which has just been described.

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The Station Staff Officer informs me, that there is plenty of accommodation within the Fort, which could, with very little trouble, be made available for a School house.

I would suggest that the Native Details be treated in the Regimental Hospital where there is ample room, and I would advice the transfer of the sick of the Jail and European Pensioners to this house.

From its proximity to the Jail, its situation would be particularly convenient. I only recommend this arrangement for sick prisoners as a temporary measure. I am aware that it is very unusual and indeed improper, that convict patients should be treated outside the Jail premises and with civil patients ; but a new Jail is about to be erected at Vellore, and at present there is no available place for a Hospital within the existing Jail premises.

Dr. Young agrees with me in advising the above arrangement, in the propriety of which he fully concurs.

RETURN showing the sickness and mortality amongst the patients treated in the Garrison Hospital, Vellore, from 1861 to 1865.

EUROPEANS.

	Average strength of Europeans.	Admissions.	Deaths.	Average daily sick.	Ratio per mille to strength. Admissions.	Deaths.	Daily sick.
1861	80	42	4	5⅛	525·0	50·0	64·06
1862	74	38	1	10	313·5	13·5	135·1
1863	177	42	4	5½	237·2	22·6	31·07
1864	73	37	4	9¼	5[illegible]6·8	54·7	126·7
1865	75	37	3	9¼	49[illegible]3	40·0	123·3

Diseases which have to made the admissions in the above return.

	Fevers	Diarrhœa.	Dysentery.	Cholera.	Atrophy.	Anasarca.	Dropsies.	Diseases of the lungs.	Diseases of the liver.	Diseases of brain.	Rheumatism.	Venereal	Ulcers and sores.	Wounds and Injuries.	Diseases of the eye.	Diseases of the skin.	Ebriositas.	Other Diseases.	Total.
1861 ...	8	4	1	...	...	...	...	4	2	1	9	2	1	3	2	2	1	2	42
1862 ...	4	2	...	...	...	...	...	......	2	4	10	1	5	3	1	1	2	3	38
1863 ...	4	2	2	...	...	...	...	2	1	4	6	4	6	4	1	1	2	3	42
1864 ...	1	3	1	...	...	4	...	3	3	3	5	1	6	2	......	......	3	2	37
1865 ...	4	...	...	...	...	1	...	1	.....	2	2	3	6	2	1	1	4	10	37

Return showing the deaths from 1861 to 1865.

	Fevers.	Diarrhœa.	Dysentery.	Anasarca	Diseases of the lungs	Diseases of the liver.	Diseases of brain	Venereal.	Other diseases	Total.
1861 ...	......	...	1	...	2	...	...	...	1	4
1862 ...	......	1	......	...	...	...	...	...	......	1
1863 ...	1	...	1	...	1	...	...	1	......	4
1864 ...	......	...	......	...	1	2	1	...	......	4
1865 ...	......	...	......	1	1	...	...	...	1	3

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Return showing the sickness and mortality amongst the patients treated in the Garrison Hospital, Vellore, from 1861 to 1865.

NATIVES.

	Average strength of Native Sick.	Admissions.	Deaths.	Average daily sick.	Ratio per mille to strength. Admissions.	Deaths.	Daily sick.
1861	2,998	117	3	10¾	39·02	1·00	3·58
1862	2,977	36	......	21	12·09	......	7·05
1863	3,050	18	1	9⅔	5·90	0·32	3·14
1864	2,203	15	1	6¼	6·80	0·45	2·83
1865	2,208	31	8	10½	14·03	3·62	4·75

Diseases which have contributed to make up the admissions in the above return.

	Fevers.	Diarrhœa.	Dysentery.	Cholera.	Atrophy.	Anasarca.	Dropsies.	Diseases of the lungs.	Diseases of the liver.	Diseases of the brain.	Rheumatism.	Venereal.	Ulcers and sores.	Wounds and injuries.	Diseases of the eye.	Diseases of the skin.	Smallpox.	Other diseases.	Total.
1861	39	5	...	...	2	2	...	4	1	5	3	2	10	8	...	11	...	24	117
1862	7	2	2	2	...	2	1	1	...	4	3	1	4	1	2	4	...	...	36
1863	3	2	1	...	...	...	...	1	...	1	3	...	3	1	...	3	...	1	18
1864	3	...	1	...	1	...	...	1	...	1	3	...	1	...	1	...	1	2	15
1865	1	2	...	5	1	2	...	5	...	3	...	2	...	...	7	...	...	3	31

Return showing the deaths from 1861 to 1865.

	Diarrhœa.	Cholera.	Atrophy.	Anasarca.	Diseases of the lungs.	Diseases of the brain.	Other diseases.	Total.
1861	......	......	1	1	......	1	......	3
1862	......	......	......	......	......	......	......	...
1863	1	......	......	......	......	......	......	1
1864	......	......	......	......	1	......	......	1
1865	......	4	1	1	1	......	1	8

JAIL.

Situation.

46. The Prisoners are confined in a portion of the Fort at its South end, the sleeping compartments being a series of small narrow rooms under the Fort wall, opening into a narrow court-yard, which is nothing more than an enclosed roadway, between the ramparts and a part of the interior fortifications.

The courtyard is entered by a gate way on each side of which are two rooms, one of which is occupied by the Jailer, the other by prisoners.

The room*, on the West, occupied as a sleeping apartment by prisoners is 32′× 31′× 12′ containing a superficial area of 992 square feet, and 11,904 cubic feet. The only ventilation is by means of four small windows, two of which open into the passage leading into the prison.

From its dimensions this room is only calculated to hold 18 prisoners at the rate of 648 cubic feet of breathing space per man, which would give each a superficial area of 55 square feet.

N. B.—If the prisoners were allotted at the rate of 36 feet per man, from the lowness of the walls they would only get 440 cubic feet of breathing space.

* Since the above was written a severe outbreak of cholera has taken place in this Jail, and out of eight deaths which have occurred up to date (September 1st), seven have been amongst the prisoners sleeping in this room.

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At the time of my visit there were 38 prisoners sleeping in it, so that each man had only 26 feet superficial, and 313 cubic feet of space.

The air of this room, which was visited an hour after it had been vacated, was insufferably hot and close, and the contaminated atmosphere had such a sickening influence as to render a stay in this apartment impossible.

There are five other sleeping apartments within the courtyard, of which the following table shows the dimensions.

	Length.	Breadth.	Height.	Superficial area.	Cubic area.	No. of prisoners allotted to it.	Superficial space afforded.	Cubic space afforded.
No. 1 Room	27'¼	6'¼	10'	178	1780	8	22	220
No. 2 do	108'	7'	10'	756	7560	38	19	190
No. 3 do	92'	7'	10'	644	6440	32	20	200
No. 4 do	92'	7'	10'	644	6440	32	20	200
No. 5 do	93'	7'	10'	} 854	8540	38	22	220
Two recesses	14'	7'	10'					

It is unnecessary to add that all these rooms are dangerously overcrowded and are intolerably hot and close. No. 1 room, being in the corner of the yard, is more so than the rest, and the prisoners complained so much of the heat, that the authorities were obliged to reduce the number of occupants to four. All the rooms are insufficiently ventilated, the only air entering being by the windows and some small open brick work at the upper part of the wall. This defective ventilation should be at once remedied by ground ventilation, and pot ventilators in the roof throughout all the sleeping rooms. The doors of the cell should be iron barred instead of panelled.

An examination of the following table shows the urgent necessity which exists for reducing the number of prisoners confined in this Jail.

	Number to be accommodated at the regulation allotment.	No. sleeping in the rooms by night.
No. 1	2	8
No. 2	10	38
No. 3	9	32
No. 4	9	32
No. 5	13	38
Room near the gate way	18	38
	61	186

From this it is seen that more than three times the number are accommodated in the space now afforded to each prisoner, averaging 21 superficial feet and 210 cubic feet, and this in rooms, which are almost entirely unventilated.

Although it is absolutely necessary to bring the overcrowding of this Jail to the notice of the Government, it is a fact that the prisoners in the Vellore Jail are and have been generally healthy. I can only attribute this to their being the whole day at work in the open air, to their having sufficient but not exhausting work, and to their being carefully dieted: should an epidemic occur however in this Jail, the mortality would most probably in a few hours, be terrible. We have the recent example in Nellore of the great loss of life caused by an epidemic in a crowded Jail, and I earnestly hope that until a new Jail can be constructed, the number of prisoners in the Jail at Vellore will be reduced, or that temporary accommodation by hutting will be provided for prisoners not convicted of heinous offences.

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47. The cook houses consist of a low tiled shed, which runs round the courtyard, and are quite sufficient for the purpose.

Cook houses.

Conservancy.

48. The Jail is thoroughly clean and its conservancy arrangements are carefully attended to.

Night urinals.

49. The arrangement of the night urinals is not altogether satisfactory. The plan adopted consists in having an opening in the lower part of the wall through which a granite channel leads from a small receptacle inside the room to a chatty placed outside. So long as the channel is well covered with coal tar and the chatties are new, the system answers very well, but in one case it was noticed, that the chatty was sodden with urine which passed freely into a small cess pit, filled with earth, which having become saturated, was most abominably offensive.

Glazed earthenware receptacles would prevent the re-currence of this. A better plan would be to have a vessel, partially filled with earth, inside the room, which could be removed every morning.

Latrine arrangements.

50. At present all the prisoners are marched out every morning to a part of the Fort in the vicinity of the Jail where trenches are dug for the reception of the excreta. These are covered in daily with earth, and the spot, at the period of my visit, was entirely free from smell; but during rainy weather I should think these trenches are apt to become offensive. No complaint, however, has been made on this account concerning them.

It is proposed to give up this arrangement and with this view, a latrine on the dry earth principle has been commenced within an enclosure at the end of theJail. At the time of my visit, this consisted of a shed with a simple tiled roof, supported on masonry pillars and open all round. It is intended to construct masonry troughs beneath it, on the same principle as the one at the Bangalore Central Jail.

A great objection to its site is, that from its enclosed position it is inaccessible to a cart and all the excreta must be carried from it through the Jail courtyard; for this reason I am of opinion that it would be a better arrangement to cover in the present latrines with a light roof and keep the present shed for a work shop.

Work shops.

51. Workshops are apparently much required as the prisoners have, at present, to work under small thatched sheds within the Jail enclosure which, from the cumbustible materials they are constructed, are liable to be burned down.

Ablution arrangements.

52. The prisoners perform their ablution round the sides of a well within the Jail enclosure; the ground around which is paved, so that percolation in the well is prevented. The water as it is used runs off by a drain into the Fort ditch.

Water supply.

53. The water used by the prisoners for drinking purposes is obtained from the well just referred to which stands within the enclosure. The water is slightly brackish but not sufficiently so, to render it disagreeable to the taste. The water is all raised by chatties.

In addition to this well there is a chunam reservoir which is supplied with water from the stone reservoir in the Fort, which receives its supply from the Soorea Goonta tank by an under ground channel.

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Drainage.

54. The drainage of the interior of the Jail is provided for a storm water drain which carries off the rain and other refuse to the Fort ditch, beneath the ramparts. There is an ammoniacal smell in parts of this drain from the prisoners passing urine into it.

Subsidiary Jail.

55. Outside the Jail is a building containing two rooms which is used as a Subsidiary Jail. The largest of these rooms is 51×12×15, with a superficial area of 612 square feet, and cubic area 9,180, giving accommodation to 17 prisoners. The ventilation was deficient ; ground ventilators should be introduced. The smaller room is 25×12×15 with a superficial area of 300 square feet, and cubic area 4,500 feet. There is space for eight prisoners in this room. The same remarks as to the ventilation of the other room apply equally to this.

Health of the Prisoners.

56. The sick Prisoners are treated at present in the Garrison Hospital.

The following return shows the number of Prisoners confined in this Jail, during 1861-62-63-64 and 65.

	Remained on the 31st December.	Admitted during the year.	Average daily strength.	Number of deaths.
1860	178	...	...	...
1861	181	9	180	4
1862	167	19	175	2
1863	179	19	179	7
1864	228	79	192	1
1865	181	25	186	15

The following table shows the sickness and mortality amongst the Prisoners confined in this Jail, during the same period as above:—

	Admissions in Hospital.	Deaths in Hospital.	Average daily sick.
1861	255	4	15
1862	212	2	$4\frac{2}{3}$
1863	170	7	5
1864	164	1	5
1865	100	15	10

Diseases which have contributed to make up the admissions in the above Return.

	Fevers.	Diarrhœa.	Dysentery.	Cholera.	Atrophy.	Anasarca.	Diseases of the lungs.	Diseases of the liver.	Rheumatism.	Venereal.	Ulcers and sores.	Wounds and injuries.	Diseases of eye.	Diseases of the skin.	Smallpox.	Other diseases.	Total.
1861... ...	72	11	5	......	1	1	9	......	5	......	39	54	11	8	......	39	255
1862... ...	96	17	2	......	1	......	7	......	16	......	27	15	......	1	......	30	212
1863... ...	54	6	5	......	1	1	1	......	8	2	48	9	1	2	8	24	170
1864... ...	27	14	6	......	......	......	5	1	7	2	76	10	1	1	......	14	164
1865... ...	15	11	5	......	8	.....	6	1	6	......	26	4	......	2	......	16	100

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Return showing the deaths from 1861 to 1865.

	Fevers.	Dysentery.	Atrophy.	Anasarca.	Diseases of the lungs.	Rheumatism.	Ulcers and sores.	Other diseases.	Total.
1861	3	...	...	...	...	...	1	...	4
1862	2	...	...	...	...	..	...	...	2
1863	2	...	...	1	1	1	...	2	7
1864	1	...	...	...	...	...	...	...	1
1865	...	6	3	1	3	1	...	1	15

The above returns yield the following results which, contrasted with the sickness and mortality in other Jails, must be considered very favorable.

	Sickness and mortality calculated on the average daily strength.		Sickness and mortality calculated on the entire prison population.	
	Admissions in Hospital per 1,000.	Deaths per 1,000.	Admissions in Hospital per 1,000.	Deaths per 1,000.
1861	83·3	22·2	1363·6	21·3
1862	26·2	11·4	1060·0	10·0
1863	27·9	39·1	913·9	37·6
1864	26·04	5·2	635·6	3·8
1865	53·7	80·6	395·2	59·2
Mean......	43·4	31·7	873·6	26·3

The chief admissions into Hospital consist of ulcers and sores, then fevers, diarrhœa, and dysentery. No admissions have taken place from Cholera, during the past five years.

The greatest mortality occurred last year when 15 deaths are recorded, six of which are from dysentery, and three from diseases of the lungs.

It may be remarked that up to the present time, the mode of calculating the amount of sickness and mortality in Jails, is most unsatisfactory from the incorrectness of the basis upon which the health of the prisoners is estimated, and contrasted with that of individuals living under other conditions.

Up to the present time, the basis of the calculation has been the average daily number of prisoners confined in Jail throughout the year, without any regard to the actual time during which each individual is confined, or without any reference to his previous health, habits, or condition of life.

The result of this mode of ascertaining the sanitary condition of a Jail is to place it in too unfavorable light, while on the other hand to estimate it simply on the entire number of prisoners confined during the year, gives a too favorable return of sickness and mortality.

Dr. Mouat the Inspector General of Jails, Lower Provinces, Bengal, makes the following remarks concerning Jail statistics in his report for 1861, which bear very forcibly upon the point in question :—

" The risks of the Jails commence from the moment the doors are closed upon " the prisoners, and the conditions of age, previous occupation, temperament, crime, " habits when at liberty, and other similar circumstances are so very different, that

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" no correct inferences can possibly be drawn from a system of calculation which " takes no heed of those conditions, and clubs them together as if they were picked " lives, such as those of soldiers, or the constituents of Insurance Societies, from " which all doubtful lives and risks are eliminated. The only rigorous method of " estimating the actual risks of imprisonment in the Lower Provinces, will be to " ascertain the exact proportion which the mortality of each class bears to the " whole number of that class in custody during each year, and this calculation " should extend to the conditions of age, crime, sentence, previous occupation, and " state of health on admission. An entire change in the form and details of the " sanitary returns will alone accomplish this purpose."

There can be little doubt then, that until some uniform method of calculating the health of Jails be adopted, from which the disturbing elements described above are taken into consideration, our present mode of forming an opinion, as to the sanitary condition of our Jail population, must be considered very untrustworthy.

I belive that the Jail statistics of Great Britain are from the same cause at present imperfect, and I know that Dr. Farr, the Registrar General, is preparing a scientific formula for calculating the rate of sickness and mortality in the fluctuating numbers of inmates of Hospitals and Jails.

CIVIL HOSPITAL.

57. The Civil Hospital is situated at the North end of the Cantonment and consists of a bungalow containing six rooms, of which the following are the dimensions.

		Superficial area.	Number of beds in each ward.	No at 80.
No. 1..............	28′ × 15′	420	5	5
" 2..............	28′ × 16′	448	3	6
" 3..............	16′ × 10′	160	2	2
" 4..............	15′ × 14′	210	4	3
" 5..............	16′ × 10′	110	2	1
" 6..............	Surgery.	....	....	....
			16	17

The rooms in the Hospital are all clean and airy, being ventilated by numerous doors and windows. The house stands on a well raised basement, and is well adapted to its requirements.

I am informed that the Hospital has accommodated 25 persons at one time, but this number could not be placed in it without much over-crowding.

The whole superficial area of the Hospital only amounts to 1,348 and therefore only gives proper accommodation to 13 persons. I would therefore strongly advise that more than the number, who were receiving in-door treatment at the time of my visit, should never be admitted at one time.

Female ward.

58. It would be very desirable if a separate ward could be erected for the treatment of females. At the time of my visit, No. 3 room was given up to two female patients, one of which was a case of venereal disease and the other a case of cancer. The limited accommodation of the Hospital rendered the separation of these classes of patients impossible, but the usefulness of the institution must be considerably deteriorated when prostitutes and respectable females are mixed together in the same room.

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59. The compound is a large one and in it are situated the subsidiary buildings, consisting of store rooms, cook houses, latrine and dead house.

Compound.

No ablution room.

60. There is no room in the institution for ablution purposes. Arrangements of this kind should certainly be made.

Latrine.

61. The latrine is conducted on the dry earth principle, and is perfectly clean.

Dead house.

62. The dead house is an ordinary out house and is very ill adapted for the performance of *post mortem* examinations, from the want of proper windows for letting in light. A window opens into the roadway which should be closed as the privacy of the building is interfered with by passers by looking in while the *post mortem* examinations are being made.

Cook house.

63. The cook houses require repairing.

Water supply.

64. The drinking water is obtained from a well in the compound; it is slightly brackish, but scarcely perceptibly so to the taste.

RETURN showing the sickness and mortality in the Civil Dispensary, Vellore, from 1861-65.

	Number of In-patients.	Number of Out-patients.	Average daily sick.		Deaths.
			In-patients.	Out-patients.	
1861	171	6,324	10	51½	19
1862	219	5,866	9½	55¾	20
1863	245	6,088	14	69¾	15
1864	114	5,473	6¼	54¼	5
1865	107	5,653	5¼	41	11

Diseases which have contributed to make up the admissions in the above return.

	Intermittent Fever.	Eruptive Fever.	Dysenteria.	Diarrhœa.	Spasmodic Cholera.	Ophthalmia.	Rheumatism.	Syphilitic and Gonorrhœal diseases.	Phthisis Pulmonalis.	Bronchitis.	Hepatic disease.	Skin diseases.	Wounds and Injuries by accident.	Other diseases	Total.
1861	686	3	151	107	7	51	171	773	1	23	2	18	277	4,225	6,495
1862	546	......	115	106	24	130	368	470	3	30	...	163	434	3,696	6,085
1863	246	.....	75	148	4	212	295	373	1	25	2	206	379	4,367	6,333
1864	245	......	55	100	1	418	185	260	1	6	...	148	252	3,916	5,587
1865	288	......	45	84	2	257	187	221	2	12	1	171	339	4,151	5,760

Return showing the deaths from 1861-65.

	Dysenteria.	Diarrhœa.	Spasmodic Cholera.	Rheumatism.	Syphilitic and Gonorrhœal diseases.	Bronchitis.	Wounds and Injuries by accidents.	Other diseases	Total.
1861	...	1	5	...	1	1	2	9	19
1862	1	1	7	1	...	...	1	9	20
1863	1	2	4	...	...	...	4	4	15
1864	1	1	1	...	...	...	1	1	5
1865	...	1	...	...	...	...	3	7	11

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65. The station bandy stand is just in front of this Hospital although a large number of bullocks are collected here on this piece of ground; its conservancy is well looked after, and it is no nuisance to the neighbourhood.

Cantonment bandy stand.

66. The village of Kusbah situated in rear of the Regimental lines of the Native Regiment, on the opposite side of the nullah before spoken of, is complained of as a great nuisance from the filthy practices of its inhabitants. These are chiefly tank diggers and families of Native Regiments on foreign service. Pigs abound here in large numbers, being the scavengers of the place, and are the staple article of diet of the residents. Whenever Cholera does appear in Vellore, it invariably breaks out in this place first, and its inhabitants suffer much at these times from this disease. The nullah and surrounding neighbourhood are used as the village latrines, and although they stand within Military limits their conservancy cannot be attended to for want of means.

Village of Kusbah.

These nuisances will I trust occupy the early attention of the proposed municipality, and the attention of the Police and Magistracy should be called to this locality which is a nidus of disease.

67. The Native city of Vellore lies between the Military station and the base of the range of hills before mentioned, the Long bazaar forming its Western boundary. Its population is estimated at 21,647. The houses are all tiled and well built, the walls neatly whitewashed and altogether the town has a particularly well-to-do appearance. The streets are regularly built, of good breadth and clearly swept. Most of them run East and West, North and South.

Native town of Vellore.

The slopes of the hill are used as the public latrine but are carefully hedged in. These localities are of course a great nuisance to the neighbourhood, but they are at some distance from any habitations.

During the rains however a large amount of filth must be washed into the town and Cantonment.

The entire absence of all public latrines for the use of the town makes this the only place available for its inhabitants and until some arrangements of this sort are made, it would be difficult to select a site, which without going to an inconvenient distance would be so slight a nuisance to the Military Station of Vellore.

68. I inspected the ground which has been selected as a site for a Cholera encampment. It is situated to the West of the Bangalore road, at a distance of four miles from the station. The ground is well raised, the soil of a hard gravelly nature, and it appears in every way suitable for the purpose.

Cholera encamping ground.

Good water is procurable from wells in the vicinity and there is a tope of trees near at hand, which would afford shade in the hot weather if required. The only objection to the site is its proximity to the high road, but as the available ground is very extensive it would be very easy to shift the camp a little further to the Westward, in order to prevent its being prejudicial to the traffic on the high road to Bangalore.

Summary of remarks and recommendations.

STATION OF VELLORE.

1st. Arrangements for preserving the purity of the water in the Soorea Goonta tank required to be made, vide para. 7.

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2nd. The tank should be cleaned out and deepened, advantage being taken of the small amount of water in it.

3rd. Drainage of the station requires improvement.

4th. The conservancy allowance is insufficient for preserving a proper sanitary state of the station, vide para. 9.

5th. Drains in the Commissariat Bazaar require improving.

6th. Station slaughter house required. Present arrangements for killing Cattle most objectionable, vide para. 12.

7th. The conservancy of the public latrines near the Commissariat Bazaar very much neglected.

REGIMENTAL LINES.

1st. Drainage of lines defective.

2nd. Conservancy bad.

3rd. Public latrine required.

4th. The Sepoys have a garden laid out for them, but do not work in it.

5th. Quarter Guard room and prison defective.

6th. A latrine required for Guard room.

7th. The Regimental Hospital latrine built in a style unsuited to the habits of Natives.

8th. The conservancy arrangements of the Hospital are defective, vide para. 30.

9th. The Officers' quarters should be provided with Native latrines for serva nt.

GARRISON HOSPITAL.

1st. The construction and situation of the Garrison Hospital most objectionable. The building should be condemned, vide remarks.

2nd. A building used as a school house within the Fort, would make a good Hospital, vide para. 45.

JAIL.

1st. The Jail very much overcrowded.

2nd. The arrangement of night urinals not satisfactory, vide para. 49.

3rd. The site of the new latrine objectionable.

4th. Better workshops required.

CIVIL HOSPITAL.

1st. A female ward required.

2nd. Bath room required.

3rd. Dead house requires improvement.

4th. Cook house requires repair.

NATIVE TOWN OF VELLORE, &c.

1st. Conservancy of a village called Kusbah within the station, much neglected.

2nd. Public latrinesrequired for Native town.

R. S. ELLIS,

Sanitary Commissioner for Madras.

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APPENDIX A.

Statistics of Mortality in the Native Army of the Madras Presidency, 1865

Stations.	Mean Strength.	Admissions.	Daily Sick.	Deaths.	Ratio to Strength per 1000. Admissions.	Daily Sick.	Deaths.
1. Vellore (*a*) ...	736·20	145	9·30	4	196·95	12·63	5·433
2. Vizianagarum ...	715·58	172	5·98	7	240·36	8·35	9·782
3. Trichinopoly ...	1321·23	422	14·93	19	319·37	11·29	14·379
4. Mangalore ...	890·40	295	12·82	7	331·31	14·39	7·861
5. Cannanore ...	1352·92	497	18·60	12	367·35	13·74	8·869
6 Hurryhur (*b*) ...	633·88	238	11·19	7	375·46½	17·64	11·043
7. Cuddapah (*c*) ...	817·27	312	23·31	4	385·75	28·52	4·894
8. Tonghoo (*d*) ...	574·25	225	31·44	3	391·81	54·74	5·224
9. Berhampore ...	706·41	288	18·17	13	407·69	25·72	18·402
10. Vizagapatam ...	934·92	387	15·59	1	413·93	16·67	1·069
11. Moulmein ...	628·08	271	19·39	9	431·47	30·87	14·329
12. Palamcottah ...	650·83	298	7·74	6	457·87	11·89	9·219
13. Quilon ...	384·33	183	8·81	2	476·15	22·92	5·203
14. Bangalore ...	2467·66	1199	52·46	23	485·88	21·25	9·320
15. Mercara ...	634·83	318	9·41	7	500·92	14·82	11·026
16 Bellary ...	1904·04	995	35·89	13	522·52	18·84	6·827
17. Madras ...	2254·58	1204	44·05	23	534·02	19·53	10·201
18. Secunderabad ...	2621·12	1581	70·53	34	603·17	26·91	1[illegible]·971
19. Malacca ...	187·00	115	4·64	1	614·97	24·81	5·347
20. Rangoon ...	824·33	543	29·82	3	658·71	36·17	3·639
21. Samulcottah ...	704·00	475	15·96	9	674·71	22·67	12·784
22. Cuttack ...	480·06	326	9·83	...	679·08	20·47	...
23. Singapore ..	533·58	373	18·57	12	699·50	34·80	22·489
24 Thayetmyoo ...	688·00	531	26·20	5	771·80	38·08	7·267
25. Kurnool (*a*) ...	468·59	388	20·82	...	828·01	44·43	......
26. Kamptee ...	1162·10	1941	62·83	44	1167·79	37·80	26·472
27. Hoshungabad ...	382·50	470	24·79	3	1228·75	64·81	7·843
28. Mysore Cantonment (*b*)	702·00	911	74·33	5	1297·72	105·88	7·122
29. Raepore ...	760·25	1014	30·02	4	1333·77	39·48	5·261

(*a*) For 8 months. (*b*) For 9 months. (*c*) For 11 months. (*d*) For 4 months.

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